

4. QUODDY NARROWS TO CALAIS, MAINE

(1) This chapter describes the Maine and New Brunswick coasts from Quoddy Narrows through Lubec Channel, Friar Roads, Western Passage, and the St. Croix River to the head of navigation at Calais. Included in the text are discussions of the Maine ports of Lubec, Eastport, and Calais; the Canadian ports of St. Stephen and St. Andrews; several small harbors on Campobello Island; and Head Harbour Passage.

(2) **COLREGS Demarcation Lines.**—The lines established for this part of the coast are described in **80.105**, chapter 2.

(3) **Charts 13394, 13396, 13398.**—The approaches to St. Croix River include Quoddy Narrows, Lubec Channel, Friar Roads, Head Harbour Passage, Western Passage, and Passamaquoddy Bay. The principal entrance is around the northern end of Campobello Island through Head Harbour Passage. This passage is deep and generally clear of dangers. The channel through Lubec Narrows is also used, especially at high water. The tidal currents are strong in both passages.

(4) **West Quoddy Head**, the easternmost point of the United States, is bold and wooded. **West Quoddy Head Light** (44°48.9'N., 66°57.0'W.), 83 feet above the water, is shown from a 49-foot red and white horizontally banded tower on the eastern edge of the headland. A fog signal is at the light. The abandoned Coast Guard lookout tower near the summit of the ridge westward of the light is the most conspicuous landmark in the approach to Quoddy Narrows from seaward.

(5) Between West Quoddy Head and Calais, fluorescent red pyramidal markers define straight line segments and turning points of the United States-Canada boundary.

(6) **Quoddy Narrows (Quoddy Roads)**, between West Quoddy Head and Canada's Campobello Island, is the usual anchorage for vessels seeking shelter or waiting for a favorable tide to pass through Lubec Narrows. The entrance, between West Quoddy Head and The Boring Stone, is about 0.8 mile wide and has a depth of 28 feet near the middle. Winds from east to south generate rough seas in the entrance.

(7) The anchorage affords shelter from northerly and westerly winds in depths of 12 to 25 feet, but is open to winds from the east and south, and protection from northeast gales is reported poor. The northern and western parts of Quoddy Narrows between West Quoddy Head and Lubec are full of shoals which partly uncover.

(8) **Sail Rock** and **Little Sail Rock** are two bare rocks on a ledge about 0.2 mile southeastward of West Quoddy Head Light. The ledge extends more than 100 yards east of the two rocks. As swirls form just southward and eastward of Sail Rock during the strength of the tidal current, the rock should be given a good berth. A lighted whistle buoy is about 0.4 mile southeastward of Sail Rock, about in line with the rock and West Quoddy Head Light. A fairway bell buoy, about 0.5 mile north-northeastward of the light, marks the entrance to Quoddy Narrows and the approach to Lubec Channel.

(9) **Round Rock**, which uncovers, and **The Boring Stone**, 5 feet high and bare, are 500 yards southwest of **Liberty Point**, a bold headland, which is the southern extremity of Campobello Island. Vessels should pass at least 300 yards off the southernmost rock. An islet about 200 yards off Liberty Point is conspicuous, as is **Ragged Point** about 0.4 mile northeastward of it.

(10) **Wormell Ledges**, which partly uncover, are about 400 yards northward of West Quoddy Head, and are marked at their northern end by a buoy.

(11) **Middle Ground**, covered 4 feet, is a shoal in the middle of Quoddy Narrows, 0.7 mile north-northwest of West Quoddy Head, and is marked on its southwestern side by a buoy.

(12) **Lubec Channel** and **Lubec Narrows**, between Quoddy Narrows and Friar Roads, have been improved by dredging. In 1977, the controlling depth was 3½ feet (10 feet at midchannel). The channel is marked by a light and buoys. At spring tides the low water may be 3 or 4 feet below the average. Lubec Narrows has strong tidal currents and eddies. It is not advisable to use this passage without local knowledge.

(13) Shoals bare on both sides of Lubec Narrows at low water. A breakwater extends from **Short Point** on the west side of the channel about 300 yards northward of **Mowry Point**, on the southwest side of the narrows.

(14) The **Franklin D. Roosevelt Memorial Highway Bridge** crosses the narrows from Lubec to Campobello Island at a point about 400 yards southward of the abandoned lighthouse on **Mulholland Point**. The fixed span has a clearance of 47 feet.

(15) Another breakwater extends from the shore to **Gun Rock** and 75 yards eastward of the rock on the west side of the channel at the north end of the narrows. This breakwater is marked by a white pyramid midway of its length. The breakwater covers at extreme high water. A ledge extending about 150 yards north-northeasterly from Gun Rock has 7 feet over it and is marked on its north end by a buoy.

(16) **Lubec** is a small town on the west side of Lubec Narrows. Its principal industries are fishing and the canning and smoking of herring. The most **prominent features** are a tall church spire on the hill in the town and an elevated tank on the north shore of the town, both of which are visible from Friar Roads and Quoddy Narrows. A prominent school and its gymnasium are about 700 yards westward of Mowry Point.

(17) **Tides and currents.**—The mean range of tide at Lubec is 17.5 feet, but tidal ranges of over 20 feet are not uncommon. For current predictions see the Tidal Current Tables.

(18) **U.S. Customs and Immigration** officers are stationed at the Roosevelt Memorial Bridge 24 hours daily.

(19) The port has two fish canning factories with wharves that bare alongside at low water.

(20) An L-shaped 250-foot pier about 0.2 mile northward of the Roosevelt Memorial Bridge is used to unload fishing boats. It has 2 feet alongside its outer face, and a suction pump is utilized to unload the boats. There is a 2,400-square-foot storage and transfer shed at the head of the pier. Boats usually unload along the outer end of the southern side of the pier at or near high water.

(21) A 170-foot-long L-shaped commercial fishing wharf with a 62-foot face is on the north waterfront. The depths alongside were reported to be 14 feet, with 6 feet along the outer face. A public small-craft launching ramp with an adjoining float landing is about 250 yards eastward of the wharf.

(22) The **harbormaster** may usually be found at the launching ramp.

(23) There are no regular repair facilities at Lubec. Due to the large tidal range, boatmen usually ground out their vessels for below-the-waterline repairs. Diesel fuel is available by truck at the cannery wharf 200 yards north of the bridge. Ice, provisions, and

limited marine supplies are available in Lubec. The town has no public transportation.

(24) **Pilotage** is not compulsory.

(25) **Johnson Bay**, on the northwest side of Lubec, is a well-sheltered and frequently used anchorage. The approach from southward is through Quoddy Narrows and Lubec Narrows, and the approach from northward is through Friar Roads.

(26) The southwestern part of Johnson Bay is shoal for a distance of 0.5 mile from its head. A shoal covered 17 feet is near the middle of the bay, and another shoal covered 11 feet is 350 yards off the eastern shore. An aquaculture site is close south-southeastward of **Rodgers Island** in about 44°51.8'N., 67°00.2'W.

(27) **Popes Folly** is a thinly wooded islet 0.3 mile north-northwest of Mulholland Point. The bar that extends southeastward from the islet to Campobello Island has a depth of 15 feet, and vessels bound southward to Lubec or through Lubec Narrows cross it. The ledge that extends northeastward from the islet is marked at its outer end by a buoy.

(28) **Dudley Island**, 0.3 mile northwestward of Popes Folly, is high and mostly grass covered. A causeway connects it with Treat Island, 0.2 mile northward.

(29) **Treat Island**, largest of the islands between Lubec Narrows and Eastport, is high and grass-covered on the south end and wooded on the north end. **Burial Islet**, small and grass-covered, is 300 yards northwestward and bare **Gull Rock** is 400 yards westward of Treat Island. The former Government wharf on the west side of the island near its north end has a depth of about 14 feet alongside.

(30) **Broad Cove**, which makes into the south shore of **Moose Island** west of Eastport, is a good anchorage. The head of the cove is shoal for a distance of 0.2 mile. Rocks, which uncover, extend 300 yards southeastward and southward from **Shackford Head**, on the western side of the entrance, and are marked at their south end by a buoy. The stacks of the reduction plants on the east side of the cove are conspicuous. Each of the two fish-reduction plants has a pier used for unloading fish products. The southernmost pier has a reported 22 feet alongside and uses suction pumps to unload fish from the boats.

(31) **Deep Cove** is the first cove to the northwestward of Broad Cove on Moose Island. A wharf in the cove is in ruins and is no longer usable. A T-shaped pier about 435 feet in length with a reported 12 feet alongside its outer face is on a former seaplane launching ramp on the southeastern side of the cove. It is used by an adjacent marine vocational school.

(32) **Snug Cove**, on the west side of Campobello Island eastward of Dudley Island, is of no importance except to small craft. Between Snug Cove and Dudley Island is an unmarked rock covered 13 feet. Vessels entering Friar Roads from the southward pass on either side of the unmarked rock.

(33) **Friars Head**, to the north of Snug Cove, is on the south side of the entrance to **Friars Bay**, on the western side of Campobello Island. Friars Bay is used as an anchorage, and on its northern side is the village of **Welshpool**, where small craft can find protection in all weather at the government wharf, which has a 215-foot face with 14 feet reported alongside. A light is on the outer end of the wharf.

(34) For a distance of 1.3 miles from Welshpool, the west shore of Campobello Island continues northward to **Bald Head**, a point just south of which is a prominent circular hill 101 feet high. From Bald Head the coast trends northeastward 0.6 mile to

Man of War Head, which is on the south side of the entrance to Harbour De Lute. The L-shaped breakwater-wharf, in the cove near the northwestern end of Man of War Head, has depths of 5 to 10 feet reported along the inner side of its north face. A light, 23 feet above the water, is shown from a skeleton tower at the outer end of the breakwater. The basin behind the breakwater has been dredged to depths of 7 to 5 feet.

(35) **Harbour De Lute** is used as an anchorage by small vessels, but those without local knowledge should not go beyond the 9-foot spot, known as **Racer Rock**, in the middle of the entrance to the inner harbor. The inner harbor is obstructed by fishweirs. Indenting the north shore of Harbour De Lute east of **Windmill Point**, which is on the north side of the entrance, are four coves that are of little importance except to the fishing industry.

(36) In **Curry Cove**, the northernmost, there is an L-shaped wharf with reported depths of 5 feet along the outer and inner sides of its 150-foot outer face. A light is on the outer corner of the wharf. The wharf is unsafe during strong southwest winds.

(37) The harbors on the west side of Campobello Island are used as harbors of refuge by fishing vessels during heavy easterly gales.

(38) **Friar Roads** (Eastport Harbor), which lies between Moose Island and Campobello Island, is approached from northward through Head Harbour Passage and from southward through Quoddy Narrows and Lubec Narrows. Friar Roads is the principal approach to Passamaquoddy Bay and St. Croix River.

(39) **Eastport**, a city situated on the hilly east side of Moose Island, is the easternmost deepwater port in the United States. The docks of the port are along the waterfront on the east shore of the island. There is a medical clinic in town.

(40) The principal industries are forest products, lobstering, herring fishing, scallop harvesting, farming and harvesting salmon, and tourism.

(41) **Prominent features.**—The principal landmarks are a green standpipe, the customhouse with its square tower, the spire of a church about 300 yards west-southwest of the customhouse, and the stacks of several canneries about the island. Numerous concrete pylon boundary markers on the tops of the hills are also conspicuous.

(42) A dredged small-craft harbor for commercial and pleasure craft is off the customhouse in Eastport. The harbor is protected on its northerly and easterly sides by a steel piling, solid fill, L-shaped breakwater-wharf onto which fishing vessels can unload their catch into trucks. In April 1984, depths of 13 feet and 9 feet were available in the southern part and northern part of the harbor, respectively. A town float with 10 feet alongside is on the inner side of the breakwater at the north end of the harbor. Boats usually moor along the inner face of the breakwater. In fair weather, berthing is available along the east and north seaward faces of the breakwater in depths of 36 feet and 6½ to 10 feet, respectively. Forest products are loaded along the east face. Electricity is available at all the berths, and diesel fuel can be delivered by truck on short notice. The breakwater is floodlighted at night. The **harbormaster** may be contacted through the town hall. A small-craft launching ramp is in the northwest corner of the harbor. Additional small-craft berths are available 0.2 mile north of the harbor.

(43) Deep-draft vessels may anchor about 0.5 mile off the town with Cherry Island bearing 017° about 1.1 miles distant. The bottom here is broken and rocky, and the tidal currents are strong. This anchorage is not recommended in easterly weather,

when more favorable conditions may be found on the opposite side of the bay off Friars Bay or off Broad Cove on the west side of the island. Anchorage in Deep Cove is not recommended due to submarine cables.

(44) **Dangers** off Eastport include **Clark Ledge**, marked by a daybeacon, about 0.5 mile north of the breakwater.

(45) **Dog Island**, 0.3 mile northwestward of Clark Ledge, has a grassy top and a shelving ledge extending about 100 yards off the high-water line of the island. **Dog Island Light DI** (44°55.1'N., 66°59.3'W.), 53 feet above the water, is shown from a skeleton tower with a square green daymark. A red sector in the light covers Clark Ledge; a fog signal is at the light.

(46) Whirlpools and eddies that are dangerous at times for small boats are encountered between Dog Island and **Deer Island Point**, 0.5 mile northeastward. They are reported to be worst about 3 hours after low water.

(47) **Tides and currents.**—The mean range of tide at Eastport is 18.4 feet. Daily predictions are given in the Tide Tables. For current predictions see the Tidal Current Tables.

(48) **Weather, Eastport and vicinity.**—July is the warmest month in Eastport with an average high of 72°F (22.2°C) and an average minimum of 53°F (11.7°C). January is the coolest month with an average high of 30°F (-1.1 °C) and an average minimum of 15°F (-9.4°C). The highest temperature on record for Eastport is 96 (35.6 °C) recorded in July 1963 and the lowest temperature on record is -23°F (-30.6 °C) recorded in December 1933. Every month, except July, has seen temperatures below 40 °F (4.4°C) and every month except June, July, and August has recorded temperatures below freezing (0 °C).

(49) The average annual precipitation for Eastport is 41.3 inches (1049 mm) with an annual maximum during early winter and a minimum during mid-summer. Precipitation falls on about 332 days each year. The wettest month is November with 4.5 inches (114 mm) and the driest, July and August, averages only 3.1 inches (79 mm). Snow falls on about 93 days each year and averages about 69 inches (1753 mm) each year. December through March each average greater than a foot (305 mm) per year while February averages 18 inches (457 mm). One-foot (305 mm) snowfalls in a 24-hour period have occurred in each month December through April. Snow has fallen in every month except June through September. Fog is present on average 112 days each year with a minimum occurrence during mid-winter and a maximum during July and August.

(50) (See page T-1 for **Eastport climatological table**.)

(51) **Pilotage, Eastport, Cobscook Bay and vicinity.**—Pilotage is compulsory for all foreign vessels, and for U.S. vessels registered in foreign trade with a draft over 9 feet.

(52) Three pilot associations serve the area:

(53) **Quoddy Pilots, USA**, Eastport, ME; telephone 207-259-7770, FAX 207-259-3414.

(54) Quoddy Pilots, USA pilot boat CHESTER T. MARSHALL (owned and also used by Eastport Pilots, USA) is a 70-foot long white-hulled fishing vessel, and when on station it displays International Code flag H by day and a white light over red light at night. The pilot boat and pilot station monitor VHF-FM channels 10 and 16, and work channel 10. The pilot boat cruising and boarding station is about 1 mile eastward of East Quoddy Head at the north end of Campobello Island. Vessels are requested to locate the pilot boarding ladder on the leeward side about 1 meter above the water. Foul weather and sea

conditions may affect boarding time. A 24-hour estimated time of arrival is requested.

(55) Arrangements for pilots are made by calling or faxing the numbers previously mentioned, through ships' agents, by VHF-FM radiotelephone to the pilot station, or calling Fundy Traffic on VHF-FM channel 14.

(56) **Eastport Pilots USA**, RRD#1, Box 12A, Gleason Cove Road, Perry, ME 04667; telephone 207-853-6020, FAX 207-853-6231, or E-Mail gmorrisson@nemaine.com.

(57) Eastport Pilot USA pilot boat CHESTER T. MARSHALL is a 70-foot long white-hulled fishing vessel. The pilot boat and pilot station monitor VHF-FM channels 14 and 16, and work on channel 65A.

(58) Vessels are requested to make the pilot ladder ready on the port side and make the best possible lee for pilot boarding.

(59) **Pen-Bar Pilots** office address is: P.O. Box 818, Woods Pond Rd., Blue Hill, ME 04614; telephone 207-374-2217, FAX 207-374-2455, telephone (Eastport) 1-888-417-7447.

(60) The pilots office monitors VHF-FM radiotelephone channels 10, 13, and 16. The station monitors VHF-FM channels 10 and 16, and uses channels 10, and 19 as working frequencies. The pilot boat, a light gray fishing boat with an off-white hull, monitors VHF-FM channels 10, 13, and 16, and works channels 10, 11, 13 and 19.

(61) The pilot boat displays International Code flag H by day and a white light over a red light at night. Vessels should rig on the leeward side a well lighted pilot ladder, safe with spreaders, about ½ meter above the water. Pilots will board vessels day and night when weather and sea conditions permit.

(62) Additional information about pilotage, towage, and the port can be obtained from Eastport Port Authority at P.O. Box 278, Eastport, ME. 04361, telephone 207-853-4614.

(63) **Towage.**—Two tugs up to 2,400 hp are available at Eastport.

(64) **Quarantine, customs, immigration, and agricultural quarantine.**—(See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(65) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(66) Eastport is a **customs port of entry**.

(67) The only active cannery along the waterfront, 100 yards north of the breakwater, has a wharf with 65-foot face and 1 to 5 feet alongside. An air suction hose is used to offload fish. Fresh water is available.

(68) The Port of Eastport offers general cargo dockage at the Breakwater Pier. The 420-foot facility can accommodate vessels with a draft up to 36 feet. Water is available at the pier with prior notice; diesel fuel can be delivered by truck. Ice, groceries, and limited marine supplies are available. A machine shop in the port handles repairs to small-craft gasoline or diesel engines. Electrical repairs can be made. Small vessels are usually grounded out at high water for hull repairs. There are a private facility for hauling out craft up to 40 feet in length and a boatbuilder who makes hull repairs; contact the harbor master for additional information.

(69) Eastport has no coastwise steamer service. An automobile ferry connects Eastport with Deer Island in summer only.

(70) There is no railroad service to Eastport, but a good highway parallels the St. Croix River to Calais. There is an airport at Eastport which is used occasionally. Taxi service provides the

only connection with the coastal bus service at Perry about 6 miles to the northwestward.

(71) **Western Passage** is between Moose Island and **Deer Island**, the next large Canadian island northwestward of Campobello Island, and connects Friar Roads with Passamaquoddy Bay.

(72) **Deer Island Point Light** (44°55.5'N., 66°59.1'W.), 35 feet above the water, is shown from a skeleton tower on the southern extremity of the island.

(73) **Johnson Cove** and **Kendall Head** are on the northeast side of Moose Island. An elevated tank painted silver just southward of Johnson Cove, a blue elevated tank and a ground tank, close northwestward of it, at **Quoddy (Quoddy Village)**, are all prominent.

(74) Earth and rock causeways block the shallow passages north and south of **Carlow Island**, which is 0.2 mile northwest of Moose Island and 0.6 mile south of **Pleasant Point**. A prominent red brick Indian mission church with square belfry and numerous houses of the Indian reservation are on Pleasant Point.

(75) **Frost Island** and **Frost Ledge** are at the northern end of Western Passage and between Pleasant Point and **Gleason Cove**, 0.9 mile to the northward. Frost Ledge extends 0.4 mile offshore and is marked by a bell buoy. Between Carlow Island and Frost Island, foul ground extends as much as 400 yards from shore.

(76) The northeastern, or Deer Island, shore of Western Passage is clear; indentations are **Cummings Cove** and **Clam Cove**.

(77) The east coast of **Campobello Island** is mostly clear and can be approached to within a reasonable distance without danger.

(78) **Local magnetic disturbance**.—Differences of as much as 5½° from the normal variation have been observed off the east coast of Campobello Island.

(79) **Herring Cove (Herring Bay)**, near the south end of Campobello Island's eastern shore, is a good temporary anchorage for large vessels. **Schooner Cove**, midway along the eastern shore, and **Mill Cove**, near the northern end, afford temporary anchorage for small craft. A 14-foot spot in the middle of the entrance to Mill Cove is marked by a buoy off its eastern side.

(80) **East Quoddy Head** is the northeasternmost point of Campobello Island. **Head Harbour Light** (44°57.5'N., 66°54.0'W.), 64 feet above the water, is shown from a 47-foot white octagonal tower on the outermost rock. The fog signal is on a small building just north of the light.

(81) **Head Harbour**, between East Quoddy Head and **Head Harbour Island**, 0.2 mile to the southeastward, is one of the best-sheltered small-craft harbors in the area. Excellent berthage is available on the westerly side of the harbor about 1.2 miles above East Quoddy Head Light at an L-shaped Government breakwater-wharf which is used by commercial fishing vessels. The wharf has a 320-foot outer southeastern face with 17 feet reported alongside. Mooring poles are provided eastward of the pier for pleasure craft. Diesel fuel is available by truck and gasoline is reported to be available at **Wilsons Beach**. The harbor affords good anchorage and wet winter storage for small vessels. The preferred channel into the harbor is northward of Head Harbour Island. The channel south of the island, shoaler and with numerous fishweirs, should not be used without local knowledge. Shoals, marked by buoys, are on both sides of the northerly

channel about 0.6 mile above the entrance light. Fishing craft drawing 9 feet and more frequent the harbor.

(82) **Wilsons Beach** is on the northwest side of Campobello Island about 2 miles southwestward of East Quoddy Head. A small harbor behind a breakwater-wharf affords good protection. Depths of 7 feet are reported along the outer part of the inner side. Crib remains are reported 200 feet west of the outer part. Gasoline and diesel fuel are reported to be available at the wharf.

(83) **Head Harbour Passage** is a deep and clear fairway, about 4 miles long, that follows the northwestern side of Campobello Island from the sea to Friar Roads, opposite Eastport, where it joins Western Passage. The route through Head Harbour Passage and Western Passage is the one usually followed by vessels going to Passamaquoddy Bay and St. Croix River.

(84) **White Horse Island**, bare, rocky, and 68 feet high, is about 2.3 miles northeastward of East Quoddy Head. The island, whitish in appearance and easily identified, is a good mark for the approach to Head Harbour Passage.

(85) **Little White Horse Ledges**, close northeastward of White Horse Island, are two dangerous unmarked submerged rocks about 250 yards apart. **North Rock**, steep-to and covered 1 foot, is about 0.5 mile northwestward of White Horse Island and is marked by a buoy off its eastern side.

(86) **White Island**, 1.6 miles northward of East Quoddy Head, has fringing shoals that extend as much as 400 yards from shore. A group of islets and shoals 0.5 mile northwestward of the island includes **Nubble Island**, **Spectacle Island**, and **Hospital Islands**.

(87) **Spruce Island**, 0.8 mile north-northwest of East Quoddy Head, is steep-to on its eastern side. Islets and shoals extend 0.8 mile westward of the island. The westernmost of these dangers are **Tinkers Lower Ledge** and **Tinkers Upper Ledge**, about 300 yards northeastward and 400 yards south-southwestward of **Tinkers Island**, respectively. Each ledge is marked by a daybeacon.

(88) **Black Rock**, small and bare, covered at high-water springs, and marked by a daybeacon, is 0.8 mile west-northwestward of East Quoddy Head and 0.6 mile southwest of Spruce Island.

(89) **Casco Bay Island**, 0.5 mile southwestward of Black Rock and 0.5 mile from the nearest part of Campobello Island, is 85 feet high. The eastern side of the island is fairly steep-to, but ledges extend 300 yards off its northern end. Several shoals and ledges are within 0.3 mile of the western side of the island, one of which about 0.3 mile to the westward is marked by buoys on its northerly and southerly sides.

(90) **Green Island** is about 0.4 mile southwestward of Casco Bay Island. A 26-foot shoal, near the middle of Head Harbour Passage and marked by a lighted buoy on its eastern side, is 0.3 mile east-southeastward of Green Island and 0.4 mile from the shore of Campobello Island. **Sandy Ledge**, 500 yards westward of Green Island, is marked by a daybeacon.

(91) **Popes Island** is 0.5 mile southwestward of Green Island. Shoals extend 300 yards southwestward of Popes Island. **Popes Shoal**, unmarked and covered 9 feet, is 300 yards southeastward of the island. An unmarked 24-foot rocky patch is about 700 yards southeastward of the island. About 0.4 mile westward of Popes Island is Chocolate Shoal, which is covered 9 feet.

(92) **Indian Island**, 109 feet high near its northern end, is 0.4 mile eastward of Deer Island Point, the south end of Deer Island. The channel between Indian and Deer Islands is deep. A shallow

bank, on which are three islets, extends about 500 yards off the southeastern part of Indian Island.

(93) **Cherry Island**, at the southeastern end of this bank, is marked at its southeastern end by a light, 40 feet above the water and shown from a red and white horizontally banded circular tower; a fog signal is at the light.

(94) **Passamaquoddy Bay** is the large indentation in the shore of New Brunswick east of the mouth of St. Croix River. The principal entrance is by way of Western Passage, which has deep water and is comparatively free from dangers.

(95) **St. Andrews**, a Canadian town in the east side of the entrance to St. Croix River, has some commerce. A large hotel with a red roof and tower is prominent. An abandoned lighthouse is on the seawall at **North Point** on the south side of the town.

(96) A dredged channel, with a depth of about 11 feet and marked by buoys, leads to St. Andrews from the southeastward. **Western (Gut) Channel** to the westward of the town had a depth of 4 feet in May 1978, and is marked by buoys and a light. The anchorage, between the town and **Navy Island**, can be used by light-draft vessels.

(97) The L-shaped 848-foot government wharf with reported depths of 7 feet alongside its 152-foot outer face is about 0.4 mile northwestward of North Point. A float landing is on the eastern outer end. Gasoline is available by truck at the wharf. Some marine supplies are available in the town and water and electricity are available on the wharf. A light is on the outer end of the wharf.

(98) **St. Croix River** extends north-northwestward for 8 miles from the southern part of Passamaquoddy Bay, then turns westward between **Devils Head** and **Todds Point**. The channel is deep and comparatively clear as far as the turn, then is narrow and winding, and has a controlling depth of about 16 feet for some 3 miles to Hills Point (45°09'53"N., 67°13'33"W.).

(99) A dredged channel leads from above Hills Point to Calais. In October-November 1977, the midchannel controlling depth was 7 feet to Todd Point, about 4.2 miles above the mouth, thence 5 feet to Calais and St. Stephen on the Canadian side of the border, except for shoaling to 3 feet about 90 feet below the International Bridge at Calais. The channel is marked by lights and buoys, but is not maintained. The two buoys on the north side of the channel at **The Narrows**, opposite **Whitlocks Mill Light 25**, tow under during the strength of the tide. Local knowledge is necessary for the river above Whitlocks Mill.

(100) Small craft up to 40 feet in length can anchor in 14 feet on the west side of the channel just above Whitlocks Mill Light, but larger craft should anchor off Devils Head.

(101) The scattered remains of an old breakwater, which uncover 12 feet in spots, extend southeastward across the mudflats on the south side of St. Croix River for about 300 yards from near channel Buoy 9. The mudflats, which uncover 11 feet, are opposite **The Ledge**, a village on the north side of the river about 9.7 miles above the mouth; caution is advised in this area.

(102) **Tides**.—The mean range of tide is 19.2 feet at Robbinston and 20 feet at Calais.

(103) **Ice**.—St. Croix River above Robbinston is reported to be closed by ice for about one or two weeks in February. The channel to the oil wharf in Calais is usually kept open by the tug and barge bound there. Quoddy Narrows and Eastport Harbor are never closed by ice.

(104) **Freshets**.—Spring freshets sometimes cause the water to rise above the level of the wharves at Calais and are accompanied by strong current. They are seldom noticeable outside of the river.

(105) **South Robbinston** is at the head of **Mill Cove**, an unimportant bight on the west side of the mouth of St. Croix River.

(106) **Liberty Point** is 0.7 mile northward of Mill Cove. **Robbinston** is a village just above Liberty Point. A red brick chimney and large green building of an inactive cannery are about 0.7 mile above the point. **Red Beach** is a small village on the west bank about 3 miles north of Robbinston.

(107) On the Canadian side of the river, about 0.3 mile above **Joes Point**, the 3-story brick and concrete building and wharf of the Atlantic Biological Station of Fish and Oceans Canada are conspicuous. The 580-foot wharf has 17 feet alongside.

(108) **St. Croix Island** is in midriver off Red Beach. **St. Croix River Light** (45°07.7'N., 67°08.0'W.), 101 feet above the water, is shown from a 49-foot red and white banded tower on the island. In 1968, a part of St. Croix Island was established as a National Monument.

(109) Scattered shoals, covered and awash, which fringe the island and extend southeastward 1.1 miles in midriver, are marked on the east side by buoys. The deeper and broader channel is eastward of the island and the shoals. The channel between the shoals and **Little Docket Island**, a wooded islet midway between the southern end of the shoals and the western shore, is used considerably by local vessels, but it is not advisable for strangers to use it as the dangers are not marked.

(110) An L-shaped wharf, owned by the Canadian Government and known as Bayside, is on the east side of the river about 1.9 miles northward of St. Croix Island. In August 1984, depths of 27 feet were reported along the 300-foot outer face of the wharf. Fish, food stuffs, lumber, and wood pulp are handled. Water is available. Pilotage for Bayside is not compulsory, but is highly recommended. Local pilots board off Head Harbour Light.

(111) **Calais** is a small city on the south bank of St. Croix River, about 14 miles above the river mouth and 24 miles from Eastport. The city has no waterborne commerce. It is a railroad freight terminus, and the manufacture of woodworking goods and shoes are the primary industries. There is a hospital in town.

(112) International Bridge, between Calais and St. Stephen, is a fixed highway bridge with a clearance of 9 feet at the head of vessel navigation on St. Croix River. Small craft do not go beyond the pool above the bridge.

(113) Most of the wharves are in ruins and dry at low water.

(114) Calais is a **customs port of entry**. The customhouse is at the American end of the bridge, as is the immigration office. The city has taxi service, and is also served by a busline from Boston. There is no harbormaster, and no known local harbor regulations in force.

(115) The town wharf at Calais has depths of 4 feet reported alongside. At Todd Point, 1.5 miles below the bridge, is a gravel small-craft launching ramp.

(116) There are no facilities on the American side of the river for servicing small craft, but gasoline, provisions, and some supplies can be obtained in town.

(117) **Pilotage** is not compulsory.

(118) **St. Stephen** is the Canadian town on the opposite side of the river from Calais. Provisions of all kinds and a limited variety of deck and engineroom stores can be obtained. Minor repairs can be made by various machine shops in the town. The town has

a hospital and plants which manufacture building materials, steel products, and candy. There is a telegraph office, bus service, and freight rail connections. A public wharf with float (45°11.5'N., 67°16.6'W.) at St. Stephen is maintained from June to September. In 1984, depths of 3 to 6 feet were reported alongside the float.

(119) **Canadian Customs and Immigration** officers are stationed at the International Bridge. St. Stephen is a customs port of entry, and marine documents are issued.

(120) **Cobscook Bay**, extending westward from Moose Island, is large and irregular and has several arms. The approach channel is between Moose Island and **Seward Neck**, about 0.6 mile southwestward. Local knowledge is needed to navigate the arms of the bay because of the numerous rocks and dangerous currents.

(121) The deepest draft using Cobscook Bay is 14 feet. Strangers seldom enter. Local knowledge is recommended.

(122) **Cobscook Falls**, the western passage from Cobscook Bay to Dennys Bay, are reversing falls; a State park is on **Mahar Point** at the falls.

(123) Good anchorage can be found in many of the arms or coves in Cobscook Bay, but in most of the channels the currents are too strong and the bottom is too rocky. In the winter, ice obstructs navigation near Whiting at the head of Whiting Bay (chart 13327) and Dennysville, and in severe winters other parts of the bay also are affected.

(124) **Bar Harbor**, a shoal arm of the bay northwest of Moose Island, can no longer be used as a shortcut between Cobscook Bay and Western Passage because the eastern passages north and south of Carlow Island have been closed by earth and rock causeways. An overhead power cable crossing the entrance has a clearance of 45 feet.

(125) **Pennamaquan River** empties into Cobscook Bay from northwestward about 4 miles west of Moose Island. The river has ample depth for about 1.7 miles above the entrance, and the principal dangers are marked by buoys. Low-water flats extend 0.8 mile downstream from **Pembroke**, a town 3 miles above the mouth of the river.

(126) Coastal oil tankers carrying 14 feet formerly used the oil pier on **Hersey Neck**, about 0.8 mile west of **Garnet Point**, the southeastern extremity of Hersey Neck. In 1979, the wharf was inactive and in need of repair.

(127) **Pilotage, Cobscook Bay**.—Pilotage is compulsory in Cobscook Bay and Pennamaquan River for foreign vessels and U.S. vessels under register and a draft over 9 feet. (See Pilotage, Eastport, Cobscook Bay and vicinity, indexed as such earlier this chapter.)

(128) **West Pembroke** is about 0.8 mile southwest of Pembroke and on the northwest prong of Pennamaquan River, which uncovers at low water. There is no waterborne commerce and no wharves at West Pembroke.

(129) **Dennysville** is a village about 1 mile up **Dennys River** at the head of **Dennys Bay**, an arm of Cobscook Bay. U.S. Route 1 highway bridge just above the mouth of the river has a fixed span with a clearance of 14 feet. There is no waterborne commerce, and the river is important only as a salmon fishing stream.

(130) **Whiting** is a village at the head of **Whiting Bay**, which is an arm of Cobscook Bay. Low-water flats filled with boulders extend about a mile below the village. With local knowledge, small craft at high water can go as far as the dam at the mouth of **Orange River** at the village. The channel is unmarked and difficult to follow.

Orange River at the village. The channel is unmarked and difficult to follow.

(131) **Currents**.—In Grand Manan Channel, the flood current sets in a general northeast direction and attains a velocity of about 2.3 knots at strength. The ebb sets in a southwesterly direction with a velocity of about 2.4 knots at strength. Daily predictions are given in the Tidal Current Tables.

(132) Less than 2 miles from the northern shore on the approach to the entrance to Quoddy Narrows, the set of the flood currents is more northward; about 1 mile southeastward of West Quoddy Head the flood sets directly into the narrows. For a distance of 0.5 mile southeastward of West Quoddy Head the currents are dangerous because of swirls and eddies which, in a light breeze, are apt to draw a vessel onto Sail Rock.

(133) Along the eastern side of Campobello Island the flood current follows the trend of the shore in a northeasterly direction and the ebb sets in the opposite direction.

(134) In Head Harbour Passage the tidal current is said to attain a velocity of 5 knots at times. The flood sets strongly westward toward the islands about 1 mile northward of Campobello Island. The direction of the flood then changes more southward, following the general direction of the passage until nearly to Eastport, where the set is more westerly, toward Western Passage between Deer and Moose Islands, and toward the entrance to Cobscook Bay. The ebb generally sets in a reverse direction.

(135) Through Lubec Narrows, the flood current sets northward, following the general trend of the channel; southward of the narrows it has a velocity of about 4 knots at strength, but in the narrows it attains a velocity of about 6 knots during the spring tides. The ebb sets southward, following the general direction of the channel, and in the narrows has a velocity of about 8 knots during spring tides. Below the narrows its velocity is about 4 knots, and the set is in the general direction of the channel. The currents at strength form dangerous eddies on both sides of the channel in the narrows; these are avoided by keeping in midchannel. The duration of slack in the narrows is only 5 to 15 minutes.

(136) Northward of Lubec Narrows, the first of the flood current sets along the west shore of Campobello Island eastward of Popes Folly; it afterwards sets more westward, south of Popes Folly, and across the entrance to Johnson Bay, meeting the flood from Friar Roads westward of Treat Island, and both setting into Cobscook Bay.

(137) The flood current sets northward into Western Passage; and off Deer Island Point, abreast Dog Island, it forms whirlpools and eddies which are dangerous to open boats. The whirlpools and eddies are strongest 2 to 3 hours before high water and during spring tides; the flood then attains a velocity of about 6 to 7 knots. The least disturbance is usually about 300 yards northward of Dog Island, where there is a comparatively narrow direct current which can be readily followed between the whirlpools and eddies on either side. The ebb sets southward but is weaker than the flood.

(138) Above Deer Island Point the flood sets northward with decreasing velocity and follows the general direction of the channel with strong countercurrents and eddies close to the shore, where the configuration of the land is favorable. The ebb sets southward with reduced velocity and disturbance off Deer Island Point, and the inshore reverse currents are less marked than on the flood. For predictions, the Tidal Current Tables should be consulted.

(139) In St. Croix River, the flood current sets northward with countercurrents inshore on both sides where the conformation of the land is favorable for them. The ebb sets southward with less marked countercurrents. The tidal current normally attains a velocity of about 2 knots between the mouth of the river and Devils Head and 3 to 4 knots between Devils Head and Calais.

(140) In Cobscook Bay and its tributaries the tidal currents follow the general direction of the channels, but in the coves there are strong reverse eddy currents, and heavy overfalls form over the submerged rocks and ledges. The velocity is estimated at 5 to 8 knots, and some of the buoys are towed under when the currents are at strength.